I CLAIM:

1. A packet based display interface arranged to couple a multimedia source device to a multimedia sink device, comprising:

a transmitter unit coupled to the source device arranged to receive a source packet data stream in accordance with a native stream rate;

a receiver unit coupled to the sink device; and

a linking unit coupling the transmitter unit and the receiver unit arranged to transfer a multimedia data packet stream formed of a number of multimedia data packets based upon the source packet data stream in accordance with a link rate that is independent of the native stream rate between the transmitter unit and the receiver unit.

2. A packet based display interface as recited in claim 1, wherein the multimedia data packet stream is one of a number of multimedia data packet streams each having an associated adjustable data stream link rate that is independent of the native stream rate.

3. A display interface as recited in claim 1, wherein the link unit further comprises:

a unidirectional main link arranged to carry the multimedia data packets from the transmitter unit to the receiver unit; and

a bi-directional auxiliary channel arranged to transfer information between the transmitter unit and the receiver unit and vice versa.

4. A display interface as recited in claim 3, wherein the bi-directional auxiliary channel is formed of a uni-directional back channel configured to carry information from the sink device to the source device and a uni-directional forward channel included as part of the main channel for carrying information from the source device to the sink device in concert with the back channel.

5. A display interface as recited in claim 2, wherein the main link unit further comprises:

a number of virtual links each being associated with a particular one of the multi media data packet streams wherein each of said virtual links has an associated virtual link bandwidth and a virtual link rate.

6. A display interface as recited in claim 5, wherein a main link bandwidth is at least equal to an aggregate of the virtual link bandwidths.

7. A display interface as recited in 1, wherein the source data stream is packetized over the respective virtual link based upon a mapping definition.

8. A display interface as recited in claim 1, further comprising:

a hot plug event detector unit arranged to automatically determine when an active sink device is connected to the linking unit.

9. A display interface as recited in claim 2, wherein the information includes display timing information used by the sink device to provide a displayed image based upon the received data stream.

10 A display interface as recited in claim 1, wherein the information includes sync loss information, dropped packets information and the results of training sessions information.

11. A display interface as recited in claim 2, wherein the multimedia data packet transfer is an isochronous type transfer that includes a video/graphics data stream and a multichannel audio stream and wherein the information transfer is an asynchronous transfer.

12. A display interface as recited in claim 1, wherein the link rate is adjustable in a range of approximately 1.0 Gigabits per second (Gbps) to approximately 2.5 Gbps.

13. A display interface as recited in claim 1, wherein the receiver unit includes a time-base recovery unit arranged to regenerate a particular data stream's native rate based upon a time stamp embedded within the main link data packets.

14. A display interface as recited in claim 13, wherein the time stamp is based upon a determination of a number of native stream clocks in 2^{20} cycles of link cycle clock frequency period.

15. A display interface as recited in claim 1, wherein when the multimedia data stream is an audio stream, then there is no associated time stamp.

16. A display interface as recited in claim 15, wherein the source device informs the display device by way of the auxiliary channel of an audio sample rate and a number of bits per sample corresponding to the audio stream.

17. A display interface as recited in claim 16, wherein a native audio stream rate is calculated based upon the audio sample rate, the number of bits per sample and the corresponding link rate.

18. A display interface as recited in claim 2, wherein the number of multimedia data streams are multiplexed to form a single data stream suitable for transmission over the linking unit.

19. A display interface as recited in claim 1, wherein some of the multimedia data packets include a number of sub-packets.

20. A display interface as recited in claim 19 further comprising:

a selective refresh unit included in the sink device that updates only a portion of a displayed graphics image for every video frame based upon a number of image coordinates corresponding to the updated portion of the displayed image by way of sub-packets included in a corresponding video data stream.

21. A packet based method of coupling a multimedia source device to a multimedia sink device, comprising:

providing a source device having a transmitter unit coupled thereto;

providing sink device having a receiver unit coupled thereto;

receiving a source data stream in accordance with a native stream rate by the transmitter unit;

coupling the transmitter unit and the receiver unit by way of a linking unit;

forming a multimedia data packet stream formed of a number of multimedia data packet based upon the source data stream; and

transferring the multimedia data packet stream in accordance with a link rate between the transmitter unit and the receiver unit.

22. A method as recited in claim 21, wherein the multimedia data packet stream is one of a number of multimedia data packet streams each having an associated adjustable data stream link rate that is independent of the native stream rate.

23. A method as recited in claim 21, further comprising:

providing a unidirectional main link arranged to carry the multimedia data packets from the transmitter unit to the receiver unit; and

providing a bi-directional auxiliary channel arranged to transfer information between the transmitter unit and the receiver unit and vice versa.

24. A method as recited in claim 23, wherein the bi-directional auxiliary channel is formed of a uni-directional back channel configured to carry information from the sink device to the source device and a uni-directional forward channel included as part of the main channel for carrying information from the source device to the sink device in concert with the back channel.

25. A method as recited in claim 22, wherein the main link unit further comprises:

a number of virtual links each being associated with a particular one of the multi media data packet streams wherein each of said virtual links has an associated virtual link bandwidth and a virtual link rate.

26. A method as recited in claim 25, wherein a main link bandwidth is at least equal to an aggregate of the virtual link bandwidths.

27. A method as recited in 21, wherein the source data stream is packetized over the respective virtual link based upon a mapping definition.

28. A method as recited in claim 21, further comprising:

automatically determining when an active sink device is connected to the linking unit by a hot plug detector unit.

29. A method as recited in claim 22, wherein the information includes display timing information used by the sink device to provide a displayed image based upon the received data stream.

30 A method as recited in claim 21, wherein the information includes sync loss information, dropped packets information and the results of training sessions information.

31. A method as recited in claim 22, wherein the multimedia data packet transfer is an isochronous type transfer that includes a video/graphics data stream and a multichannel audio stream and wherein the information transfer is an asynchronous transfer.

32. A method as recited in claim 21, wherein the link rate is adjustable in a range of approximately 1.0 Gigabits per second (Gbps) to approximately 2.5 Gbps.

33. A method as recited in claim 21, wherein the receiver unit includes a time-base recovery unit arranged to regenerate a particular data stream's native rate based upon a time stamp embedded within the main link data packets.

34. A method as recited in claim 33, wherein the time stamp is based upon a determination of a number of native stream clocks in 2^{20} cycles of link cycle clock frequency period.

35. A method as recited in claim 21, wherein when the multimedia data stream is an audio stream, then there is no associated time stamp.

36. A method as recited in claim 35, wherein the source device informs the display device by way of the auxiliary channel of an audio sample rate and a number of bits per sample corresponding to the audio stream.

37. A method as recited in claim 36, wherein a native audio stream rate is calculated based upon the audio sample rate, the number of bits per sample and the corresponding link rate.

38. A method as recited in claim 22, wherein the number of multimedia data streams are multiplexed to form a single data stream suitable for transmission over the linking unit.

39. A method as recited in claim 21, wherein some of the multimedia data packets include a number of sub-packets.

40. A method as recited in claim 39 further comprising:

a selective refresh unit included in the sink device that updates only a portion of a displayed graphics image for every video frame based upon a number of image coordinates corresponding to the updated portion of the displayed image by way of sub-packets included in a corresponding video data stream.

41. A packet based video interface for coupling a source device and a display device, comprising:

a source application layer arranged to provide a source data stream, a data stream format, a number of data stream attributes, and a stream identification number;

a source link layer coupled to the source application layer arranged to provide link initialization and video interface management functions;

a source physical layer coupled to the link layer that includes,

a source logical layer arranged to at least packetize/depacketize data, scramble/unscramble data, generate link training patterns, encode and decode data, and

a source electrical layer that includes circuitry for initialization, parallel to serial and serial to parallel conversions, and spread spectrum capable PLLs;

a bidirectional auxiliary channel coupling the source device physical layer and a display device physical layer arranged to transmit information between the source device physical layer and the display device physical layer and vice versa; and

a unidirectional main link coupling the coupling the source device physical layer and the display device physical layer arranged to transmit information between the source device physical layer and the display device physical layer.

42. A packet based video interface as recited in claim 41, further comprising:

a display device application layer arranged to provide a set of display attributes to the source device application layer; and

a display device link layer coupling the display device application layer to the display device physical layer.

43. A packet based video interface as recited in claim 42, wherein the display device application profile layer and the source device application profile layer are each anapplication programming interface that describes a format for the source data stream and the display device.

44. Computer program product for packet based coupling of a source device and a display device, comprising:

computer code for providing a source data stream, a data stream format, a number of data stream attributes, and a stream identification number;

computer code for providing link initialization and video interface management functions;

computer code for packetizing and/or depacketizing data;

computer code for scrambling and/or unscrambling data;

computer code for generating link training patterns;

computer code for encoding and decoding data;

computer code for initialization of the coupling;

computer code for providing parallel to serial and serial to parallel conversions;

computer code for transmittin information between the source device physical layer and the display device physical layer and vice versa by way of an auxiliary channel;

computer code for transmitting information between the source device physical layer and the display device physical layer; and

computer readable medium for storing the computer code.

45. Computer program product as recited in claim 44, further comprising:

computer code for providing a set of display attributes to the source device application layer

46. Computer program product as recited in claim 45, further comprising computer code for describing a format for the source data stream and the display device.